SANTA FE FIRE DEPARTMENT

STANDARD OPERATING PROCEDURES

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ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.1 PURPOSE

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.1.1 Purpose	Revised: 2002

The purpose of these Emergency Response Guidelines are to establish a means by which to mitigate hazardous materials incidents within the initial response area of Santa Fe Fire Department and any mutual aid responses outside its district.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.2 OBJECTIVES

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.2.1 Objectives	Revised: 2002

The SOPs describe the following objectives:

A. Operational concepts, organization and support systems required to implement the plan.

B. Identify the authority, responsibilities and actions of federal, state, and local government, as well as private industry, necessary to minimize damage to human health, property and the environment.

C. Establish an operational structure that has the ability to function both in and outside the city when the Hazardous Materials Team is requested to respond to an incident.

D. To utilize fire department officers and members who have been trained to handle hazardous materials at the operations, technician and specialist levels.

E. To utilize members from mutual aid departments for the purpose of first responder, operations, technician and specialist level response.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.3 AUTHORITY

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.3.1 Authority	Revised: 2002

A. Fire Prevention Code, NFPA 1

B. New Mexico Hazardous Materials Response Plan

C. Code of Federal Regulations, 29 CFR 1910.120

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.4 SCOPE

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.4.1 Scope	Revised: 2002

The hazard shall include any substance or material in quantities or forms that may pose an unreasonable risk to health, environment, safety or property if released during storage, transportation or use.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.5 INCIDENT CLASSIFICATION

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.5.1 Incident Classification	Revised: 2002

All incidents shall be classified based on the following criteria:

A. The extent of municipal, county, state, and federal involvement

B. The level of technical expertise required at the scene

C. Evacuation

D. The extent of injuries or deaths

E. Decontamination requirements

F. Containment requirements

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.5.2 Incident Classification Levels	Revised: 2002

A. Level I:
A Level I incident is any incident which can be controlled utilizing equipment, supplies, and resources immediately available to the first in company. It will not require any special equipment and Operations level personnel shall be able to perform all required tasks. A Level I incident shall not require any evacuation and not involve any major injuries or any deaths.

B. Level II:
Level II incident will require the use of the Hazardous Materials Team and may require County or State assistance. Any call involving an unknown material shall automatically be considered a Level II incident. A Level II incident may require local evacuation or could include major injuries.

C. Level III:
Level III incidents will require mutual aid response teams and or the expertise of industrial response teams. It could also include a county, state and federal response.
    1. It may involve a large evacuation area.
    2. It may include multiple injuries and deaths.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.6 SCENE MANAGEMENT

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.6.1 Incident Command System	Revised: 2002

During all incidents, Santa Fe Fire Department shall employ the Incident Command System to help ensure that actions taken at an incident are effectively controlled and that risks and benefits of various alternative courses of action are evaluated on an on going basis.

A. Under all levels of operation the Incident Commander of the Santa Fe Fire Department shall provide direct control and authority of all fire department related activities and personnel, including all mutual aid companies.

B. A Haz-Mat Team member may be assigned to assist the incident commander upon arrival on scene. Depending on the size or complexity of the incident, the IC may establish a command structure to allow him/her to concentrate on Haz-Mat operations.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.6.2 Hazardous Materials Response Plan (HMER)	Revised: 2002

All operations shall be in compliance with the New Mexico Hazardous Materials Response Plan (HMER)

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.6.3 Accountability	Revised: 2002

An integral part of ensuring the safety of operating forces is the implementation of an accountability mechanism so that the status of units and personnel operating at the scene are monitored at all times.

A. Level I:
   Incidents shall be in the control of the ranking Department Officer on scene.

B. Level II & III:
   The IC shall utilize the Department's Accountability System to properly track personnel resources.
   1. During incidents of this scale a State Police Emergency Response Officer shall be present and act as the On Scene Coordinator.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.6.4 Clean up and Disposal	Revised: 2002

The primary responsibility for the assumption of all costs for response, clean-up and disposal shall be:

A. The person or persons whose negligent or willful act caused the spill or release.
B. The person or persons who own or had custody of the chemical or hazardous material or waste at the time of the spill or release.
C. The person or persons who owned or had custody or control of the container or transport vehicle that held such chemical or hazardous material or waste.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.7 POSITION DESCRIPTIONS AND FUNCTIONS

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.7.1 Scope	Revised: 2002

Santa Fe Fire Department shall maintain a Haz Mat Team with specially trained individuals for the purpose of responding to chemical emergencies or other hazards, which are outside the scope of regular operations for firefighters. The Haz Mat Team can provide expertise and equipment specially developed to help control and abate a hazardous materials incident.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.7.2 Positions	Revised: 2002

A. **Haz Mat Group Supervisor:**
The Haz Mat Group Supervisor reports to the Incident Commander. The Hazardous Materials Group Supervisor is responsible for the implementation of the phases of the Incident Action Plan dealing with the Hazardous Materials Group operations. The Haz-Mat Group Supervisor is responsible for the assignment of resources within the Haz-Mat Group, reporting on the progress of control operations and the status of resources within the Group. The Haz-Mat Group Supervisor directs the overall operations of the Haz-Mat Group.

1. Roles of the Hazardous Materials Group Supervisor:
   a. Check in and obtain briefing from the IC
   b. Ensure the development of Control Zones and Access control Points and the placement of appropriate control lines.
   c. Evaluate and recommend public protection action options to the IC.
   d. Ensure that current weather data and future weather predictions are obtained.
   e. Establish environmental monitoring of the hazard site for contaminants.

f. Ensure that a written Site Safety Plan is developed and implemented.
g. Conduct safety meetings with the hazardous materials Group.
h. Participate, when requested, in the development of the Incident Action Plan.
i. Ensure that safe operational procedures are followed.
j. Ensure that the proper Personal Protective equipment is selected and used, based on recommendations of Tech Ref.
k. Ensure that the appropriate agencies are notified through the IC.
l. Maintain unit log.

B. **Entry Leader**

The Entry leader reports to the Haz-Mat Group Supervisor. The Entry leader is responsible for the overall entry operations of assigned personnel within the Exclusion Zone.

1. Roles of the Entry Leader:
   a. Check in and obtain briefing from the Haz-Mat Group Supervisor.
   b. Supervise entry operations.
   c. Recommend actions to mitigate the situation within the Exclusion Zone.
   d. Carry out actions, as directed by the Hazardous Materials Group Supervisor, to mitigate the hazardous materials release or threatened release.
   e. Maintain communications and coordinate operations with the Decontamination Leader.
   f. Maintain communications and coordinate operations with Technical Specialist-Haz-Mat Reference.
   g. Maintain control of movement of people and equipment within the Exclusion Zone, including contaminated victims.
   h. Direct rescue operations, as needed, in the Exclusion Zone.
   i. Establish a Safe Refuge Area within the Contamination Reduction Zone.
   j. Maintain unit log.

C. **Decontamination Leader:**

The Decontamination Leader reports to the Haz-Mat Group Supervisor. The Decontamination Leader is responsible for the operations of the decontamination element, providing decontamination as required by the Incident Action Plan.

1. Roles of the Decontamination Leader (Decon Leader):
   a. Check in and obtain briefing from the Haz-Mat Group Supervisor.
   b. Establish the Contamination Reduction Corridor or Decontamination Path.
   c. Identify contaminated people and equipment.
   d. Supervise the operations of the decontamination element in the process of decontaminating people and equipment.
   e. Maintain control of movement of people and equipment within the contamination reduction zone.
   f. Maintain communications and coordinate operations with the Entry leader.
   g. Coordinate the transfer of contaminated patients requiring medical attention (after decontamination) to the Medical Group.
   h. Coordinate handling, storage, and transfer of contaminants within the contamination reduction zone.
   i. Maintain unit log.

D. **Safety Officer:**

The Safety Officer is a member of the command staff. This position is responsible for the monitoring and assessing of hazardous and unsafe situations and developing appropriate measures to assure personnel safety at an incident.

1. Assistant Safety Officer-Hazardous Materials Roles:
   a. The Safety Officer shall assess the actions of the first responders to the incident.
   b. The Safety Officer shall have the authority to suspend or alter operations that threaten personnel.
   c. The IC shall be notified immediately of such situation and also of any IDLH condition.

E. **Assistant Safety Officer (Hazardous Materials):**

Reports to the Incident Safety Officer as an Assistant Safety Officer and coordinates with the Hazardous Materials Group Supervisor. The Assistant Safety Officer-Hazardous Materials coordinates safety related activities directly relating to the Hazardous Material Group operations as mandated by 29 CFR part 1910.120 and applicable state and local laws. This position advises the Hazardous Materials Group Supervisor on all aspects of health and safety and has the authority to stop or prevent unsafe acts. It is mandatory that an Assistant Safety Officer-Hazardous Materials be appointed at all hazardous materials incidents. The Assistant Safety Officer-Hazardous Materials

must be trained to the level of the operation, In a multi-activity incident the Assistant Safety Officer-Hazardous Materials does not act as the Safety Officer for the overall incident.

1. Assistant Safety Officer-Hazardous Materials Roles:
   a. Check-in and obtain briefing from the Incident Safety Officer.
   b. Obtain briefing from the Hazardous Materials Group Supervisor.
   c. Participate in the preparation of, and implement the Site Safety Plan.
   d. Advise the Hazardous Materials Group Supervisor of deviations from the Site Safety Plan or any dangerous situations.
   e. Has the authority to alter, suspend or terminate any activity that may be judged to be unsafe.
   f. Ensure the protection of the Hazardous Materials Group personnel from physical, environmental and chemical hazards/exposures.
   g. Ensure the provision of required emergency medical services for assigned personnel and coordinate with the Medical Unit Leader.
   h. Maintain Unit Log.

F. **Technical Specialist (Hazardous Materials Reference):**
This person reports to the Hazardous Materials IC or Group Supervisor. This position provides technical information and assistance to the Hazardous Materials Group using various reference sources such as computer data bases, technical journals, CHEMTREC, and phone contact with facility representatives. The Technical Specialist-Hazardous Materials Reference may provide product identification using hazardous categorization tests and/or any other means of identifying unknown materials.

1. Technical Specialist (Tech Ref) roles include:
   a. Check in and obtain briefing from the Haz-Mat Group Supervisor or IC.
   b. Obtain briefing from the Planning Section Chief.
   c. Provide technical support to the Haz-Mat Group Supervisor or IC.
   d. Maintain communications and coordinate operations with the Entry Leader.
   e. Provide analysis of hazardous material samples.
   f. Determine personal protective equipment compatibility to hazardous material.

g. Provide technical information of the incident for documentation.
h. Provide technical information management with public and appropriate agencies i.e. Poison Control Center, Tox Center and CHEMTREC.
i. Recommend appropriate decon methods.
j. Assist in the planning and projecting of potential environmental effects of the release.
k. Maintain unit log.

G. **Haz Mat Team Members:**
Maintain training and participation levels as required by department and team standards. Haz-Mat Team members shall be ready to assume any position of command according to their level of training during an incident.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.8 SCENE CONTROL

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.8.1 Zones	Revised: 2002

A. Hot Zone (restricted):
Shall be identified by the Haz Mat Group Supervisor and the Safety Officer as soon as possible. This area could present extreme dangers to life and the environment. Access to this area shall be under the control of the Haz Mat team.

B. Warm Zone (limited access):
Shall be identified by the first arriving company officer and the Safety Officer. This area should not be entered until cleared by the Haz Mat Team since some potential exists for injury or contamination.

C. Cold Zone (support):
Shall be restricted to emergency service personnel required to be on scene. This zone shall be established by the Haz Mat Group Supervisor and the Safety Officer. The Decontamination Zone shall be identified by the Haz Mat team. Access to this area shall be under the control of the Haz Mat team. (Only a Haz Mat leader or an officer appointed by the Haz Mat leader may allow anyone to exit the Decon Zone.)

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.9 ACTIVATION

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.9.1 Activation	Revised: 2002

This plan will become effective when the Fire Department receives notification of a hazardous materials incident or the Haz Mat team is requested for mutual aid. Response for a level II or III incident will follow Santa Fe Dispatch protocol.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.10 SCENE OPERATIONS

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.1 Initial On Scene Actions	Revised: 2002

A. The first Fire Department officer shall attempt to identify the material involved, quantity, possible contamination and exposure problems. If the officer determines the incident is a level I they shall proceed to mitigate the problem.

B. If the IC determines the incident cannot be mitigated with a regular fire crew he/she shall confer with the on-duty Battalion Chief prior to activating the Haz-Mat team. Once the team has been activated, the IC will take whatever action is necessary to control the incident within the capabilities of the company and equipment, until the Haz Mat teams arrival.

C. The Officer shall also:
   1. Identify the warm zone and control access to the scene.
   2. Establish a command post and relay this information to responding units.
   3. Contact dispatch and confirm an ERO is responding.
   4. Establish a staging area for responding equipment.
   5. Contact appropriate agencies for support purposes.

6. Begin evacuation procedures.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.2 Personal Protective Equipment (PPE)	Revised: 2002

The purpose of Personal Protective Equipment (PPE) is to shield or isolate personnel from the chemical, biological, radiological and physical hazards that may be encountered during a hazardous materials emergency. At all times manufactures guidelines should be followed for use, donning, doffing and inspecting of protective equipment.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.3 PPE levels	Revised: 2002

The EPA and OSHA 1910-120 have designated four levels of personnel protective clothing and equipment. The levels range from A to D and respectively equate to extreme hazards or unknown materials to situations were only work uniforms are needed.

A. LEVEL A: Level A is to be selected when the greatest level of skin, respiratory, and eye protection is needed. Level A includes:
   1. SCBA
   2. Totally encapsulated chemical protective suit
   3. Coveralls
   4. Outer and Inner gloves
   5. Boots
   6. Nomex Hood (optional)

B. LEVEL B: Level B is to be selected when the highest level of respiratory protection is required but a lesser degree of skin hazard exists. Protective clothing affords splash protection but does not need to be vapor tight. Use Level B when dealing with unknown chemicals or combination of chemicals. Level B includes:

1. SCBA
2. Hooded coveralls that are chemical and splash resistant.
3. Gloves
4. Boots
5. Nomex Hood (optional)

C. LEVEL C: Level C is to be selected when the level and toxicity of air-born substances is a potential hazard, and a lesser degree of skin hazard exists. Protective clothing does not need to be vapor tight. Level C equipment would include:
   1. SCBA or APR
   2. Level B clothing (not encapsulated)
   3. Coveralls, optional
   4. Gloves, inner and outer
   5. Boots

D. LEVEL D: Level D is the lowest level of protection and constitutes a basic work uniform. This is to be used for nuisance contamination only. Equipment includes:
   1. Coveralls
   2. Gloves
   3. Boots or shoes
   4. Safety glasses or goggles
   5. Structural Firefighter equipment (optional)

E. FLASH SUIT: The flash suit is an over suit designed to be worn with Level B or A chemical suits when a potential for a flash fire exists. The suit is not designed to be used when fire hazard or high heat is known to exist. It is also not for firefighting.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.10.4 Suit Selection	Revised: 2002

Selection of PPE is a complex task, which should take several factors into consideration. The identification of the hazards or suspected hazards, their routes of potential hazard, (inhalation, absorption, ingestion eye or skin contact) and the manufactures information on PPE performance. The selection process should include the Haz Mat Leader, Team Safety Officer and the Technical Reference Person.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.5 Medical Surveillance	Revised: 2002

All personnel who operate in Level A through Level C PPE, must participate in our Medical Surveillance program, including entry baseline medical evaluations. Personnel working in PPE will require frequent rest periods and hydration. Before personnel don PPE, a medical assessment will be done by EMS personnel. Personnel shall also have a medical assessment after completion of working in the hot zone.

Minimum Suggested Pre Entry Health Guidelines

1. Blood Pressure <150/90
2. Pulse <110 beats per minute
3. Temperature <99° degrees F

Point at which responders should not be allowed to start or return to work

1. Blood Pressure >150/90
2. Pulse >120 beats per minute
3. Temperature >than 100.6° degrees F

If signs of heat stress are apparent, such as fever, nausea, dizziness, eye irritation, difficult breathing, excessive tiredness, sensation of unusual odor or taste, the team member must exit and remove the suit ASAP after decontamination.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.6 Testing Procedures	Revised: 2002

Follow Instructions in the technical data package with the PPE and record tests on log.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.7 Emergency Operating Procedures	Revised: 2002

All personnel must be able to perform the following emergency procedures.

A. Hold right outer glove and remove arm from suit sleeve

B. Reach across body and open bypass valve

C. Adjust airflow

D. Close main line valve

E. Leave the area

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.8 Buddy System	Revised: 2002

All personnel on entry will utilize the buddy system. During operations in IDLH atmospheres backup personnel will be suited up and ready to perform rescue.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.10.9 Additional Safety Considerations	Revised: 2002

All personnel who may use the Departments PPE shall have a complete understanding of this ERP.

A. SCBA: PPE which is encapsulated requires SCBA. All members should follow the Departments SCBA operating standard. The Scott air packs with 60 Minute bottles are the units to be used for entry and backup teams.

B. Hearing Protection: In a noisy atmosphere always wear hearing protection.

C. If any damage is evident before donning a suit DO NOT USE IT.

D. Attempt to stay out of product as much as possible.

E. Be aware that in cold and dry conditions static electricity can build up and be discharged.

F. Suits and PPE may become brittle and stiff in extreme cold conditions.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.10.10 Physical Condition	Revised: 2002

Physical Condition: Suits shall be worn only by those individuals who are in good physical condition. Person who displays excessive stress such as nausea, dizziness or excessive heat build up should leave the work area immediately and get out of the suit ASAP, after decontamination.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.10.11 Pre-Entry Briefing	Revised: 2002

Pre-entry briefing will be performed. The Haz Mat Group Supervisor, technical reference person, and safety officers will brief entry, decon and backup personnel about the mission and tactics to be employed. The duration of the work mission will be discussed in the pre entry briefing. During this time consideration will be given to the distance and time required to enter the hot zone, time to return to the warm zone and overall decon and doffing time. Communications for all positions will be covered at this time, and a Safe Zone will be identified. Consideration should also be given to weather conditions that may effect work time such as high heat or severe cold.

A. Decon will be ready for operation before any scene entry is made.

B. Personnel will also be ready to perform emergency decon of any personnel or victims who require it.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.10.12 Debriefing	Revised: 2002

A debriefing shall be conducted for all level II and level III responses an soon as practical.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.10.13 Safe Refuge Area	Revised: 2002

The safe refuge area(s) are areas identified for the assembly of civilian personnel who are witnesses to the event or who may be contaminated and must await decon procedures, medical aid, or transport. This area should be located within the contamination control line and away from the decon station.

The safe refuge area is also an area where the entry team may retreat to in the event of an extraordinary situation or emergency and await further instructions or support.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.10.14 Scene Safety Levels	Revised: 2002

A. Immediately Dangerous to Life and Health

If IDLH of a substance is		**The substance is**
1-10 PPM		Extremely Toxic
10-100 PPM		Highly Toxic

100-1000 PPM		Moderately Toxic
1000-10,000 PPM		Slightly Toxic
10,000-100,000 PPM		Practically non-toxic
>100,000 PPM		Relatively harmless

B. Explosive Atmosphere

LEL ACTION

<10% continue investigation
10%-25% continue with extreme caution
>25% withdraw immediately

OXYGEN ACTION

<19.5% monitor with SCBA, combustible gas readings are not valid when <15%,
15%-23.5% continue investigation with caution,
>23.5% withdraw, fire hazard potential

RADIATION ACTION

<5 mR/Hr radiation above background levels use caution
>5 mR/Hr potential radiation hazard, withdraw

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.11 TRAINING

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.11.1 Training Requirements	Revised: 2002

All compensated Haz-Mat Team Members shall maintain a minimum of 24 hours of continuing education annually. Those hours will be made available through monthly drills. Annual training schedule for the calendar year will be posted at the beginning of each year.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.11.2 Staffing and Attendance	Revised: 2002

All compensated Haz-Mat Team Members shall not miss more than two consecutive calls. Exceptions may be made on a case by case basis by the Haz-Mat Team Leaders depending on the reasons for a team members failure to respond.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.11.3 Recruitment	Revised: 2002

The Haz-Mat team selection process will be as follows:

A. An announcement indicating a vacancy on the team shall be sent to all Santa Fe Fire Department members. Two weeks will be allowed to give those interested in applying time to send a memo to the Training Division requesting an interview for the vacant position. The date of interviews will be included in the announcement. Any copies of certificates or proof of experience relating to hazardous materials will be accepted at this time.

B. Interviews will be conducted of all applicants. The interview board shall consist of a minimum of one Chief Officer and two Haz-Mat Team Members.

C. Results of the interviews will be forwarded to the Fire Chief.

D. The Fire Chiefs selection of recommended applicants shall be final.

All compensated Haz-Mat team members shall meet the minimum physical standards as prescribed below. Each member will be required to complete a physical examination, medical history and baseline laboratory test. This test will be conducted annually, upon termination and after any exposure to a hazardous material. Each team member's medical records will be kept on file by the local jurisdiction for a minimum of thirty years after the end of Fire Department employment.
The Occupational Physician will determine if the team member is medically fit to work as a HAZ-MAT team member, able to perform the physical demands required, able to wear respiratory protective equipment and function in an encapsulating suit.
If a member fails to meet the minimum physical standards that member will be given four (4) months to try to meet the standard. Member shall have the opportunity to get a second medical opinion at their own expense. If that member fails again, they shall be removed from the team.

A. Elements of medical monitoring:
   1. Physical Examination
   2. Medical History
   3. Laboratory Test
      a. Complete blood count
      b. Urinalysis
      c. Berium electrolytes
      d. Total bilirubin
      e. Fasting blood glocose
      f. Creatinine
      g. Blood urea nitrogen
      h. Chest X-ray
      i. Heavy metal poisoning (Minimum-lead, arsenic and mercury)
      j. Electrocardiogram
      k. Full pulmonary function test
      l. Red blood cell count
      m. Audiogram
      n. Calcium
      o. Cholesterol
      p. Triglycerides

q. Uric acid
r. Total protein
s. Albumin
t. Thyroid function
u. Herbicides 5-6-11
v. Organochlorine 1-5-6
w. Organophosphates 1-5-6
x. Carlamates 12-13-14
y. PCB's 6-9-10-12-13-14

B. Baseline Medical Monitoring
1. Chemical Exposure Tracking
a. A team member should complete an exposure specific physical examination when a documented exposure occurs or the team member exhibits signs or symptoms of a toxic exposure.
b. After completion of the exposure specific physical examination the medical provider will determine if additional tests or follow-up testing is necessary.
c. An exposure will be defined as a direct or indirect contact with a toxic substance as a result of equipment failure, improper protective clothing for the toxic environment or the individual exhibits signs and symptoms of a specific toxic exposure. The incident commander should verify by documentation all incidents of a possible personnel exposure.

NOTE: All team members should keep a personal diary of all exposures regardless if the exposure seems insignificant. The diary should consist of the date, substance or toxin, area (s) of the body exposed, symptoms and treatment, and follow-up if required.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.11.5 New Technology Items/Evaluations	Revised: 2002

In order to follow OSHA 1910.120 (o) for new technology evaluations of items, the Haz Mat Team Leader will evaluate new equipment that is proposed for Hazardous Materials response. Equipment may be tested by the Haz Mat team during regular training drills.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.12 DECONTAMINATION GUIDELINES

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.12.1- Purpose	Revised: 2002

The purpose of this SOP is to familiarize current and new personnel of the Department with our standard operating procedures for decontamination. It is intended to provide basic guidelines for fire ground personnel. These guidelines are not intended to limit or restrict initiative, judgment or independent action required to provide appropriate operations. Each incident will differ by type, size, location, extent of damage and persons affected, but the basic responsibilities remain the same.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.12.2- Scope	Revised: 2002

One of the most important aspects of controlling the scene of a hazardous materials incident is that of decontamination. Clothing, equipment or personnel may become contaminated with toxic or radioactive materials. To ensure that contamination is not spread to other areas, increasing the magnitude of the problem, strict decontamination procedures must be followed. The exact procedure for decontamination varies slightly, depending on the material. However, the basic procedures involved remain the same. There are four basic types of contaminates with which emergency personnel may be involved.

A. water soluble liquids and solids

B. non-water soluble liquids and solids

C. solids and liquids which will react with water

D. radioactive materials

Each type presents unique problems. It is critical that personnel consult reference Materials, technical consultants, and industry experts when selecting a decon method.

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.12.3- Decontamination Team	Revised: 2002

The team should consist of at least three Operations Level trained personnel.
A. Decon Team Leader
B. Decon team members (minimum of 2)

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.12.4- Decontamination Areas	Revised: 2002

Decontamination procedures may require several areas. The first area or **STAGE 1** is outside the immediate hazard, but still should be considered contaminated. It is at this stage where personnel from the hot or contaminated zone are washed, or brushed down, depending on the decontamination process required. All water from this stage should be contained in pools or tanks. After the initial wash-down the personnel should travel to stage 2 via the designated path. It should be noted that the path between stage 1 and stage 2 is considered contaminated and no one should enter except those being decontaminated.

At **STAGE 2**, the personnel's outer clothing is cleaned more thoroughly, removed and retained. Again all cleaning materials and containment water should be retained for later disposal. After the second wash down and equipment removal in stage 2 the personnel travel via another designated path to a safe refuge area in the cold zone to change clothing, and have their medical condition assessed. The final area necessary is referred to as the holding area. This is where all possible contaminated clothing and equipment is placed until final cleanup and testing can be done. The size and type of decon setup shall be determined by the chemical involved.

Level of protection shall be specified by designated HAZMAT Group Supervisor with advice from Tech Ref.

A. Stage 1 Setup

1. Pool or salvage covers for containment
2. One roll plastic film
3. One roll barrier tape to mark off area and pathway
4. Suitable number of cones for pathway and perimeter
5. Buckets, brushes, sprayers, water or decon solution (dependent on HAZMAT Group Supervisor with advice from Tech Ref.)
6. Low volume hose and nozzle
7. Plastic bags or containment drums for contaminated clothing and equipment

B. Stage 2 Setup

1. Tags, to identify contaminated equipment with information such as:
2. date, time, place, chemical etc. (duct tape can be utilized)
3. Buckets, brushes, low volume hose, nozzle and decon solution
4. Measuring or detection equipment to evaluate level of contamination, (especially critical for radiological incidents)

C. Clean Gear Path

Clean garments (i.e. coveralls, suits, Tyvek suits) and boots for personnel

NOTE: The decon manifold that converts a 2 1/2" to three gated garden hose outlets should be charged to 25 PSI by the engineer supplying it.

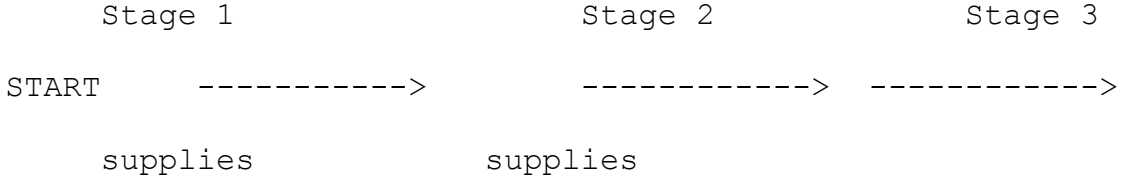
D. Cleansing and stripping of Personnel

This section describes the cleaning and stripping of personnel. It assumes that the type of decontamination has already been determined. (I.e. wet or dry)

1. Help the wearer into the pool and then wash/brush thoroughly downward from head to toe paying particular attention to the feet.
2. Move wearer to stage 2.
3. Perform second wash/brush paying particular attention to seams and folds on suit.
4. Have wearer step into plastic bag.
5. Carefully remove suit without contacting wearer's inner clothing.
6. Have wearer step out of suit and seal bag.
7. Remove SCBA and bring to holding area.
8. Have wearer step into clean boots and proceed to stage 3 for shower and change of clothes.
9. Bring all wearers clothing to holding area to await testing and decontamination if necessary.

This procedure will also work for personnel in coveralls and bunker gear.

E. DECONTAMINATION PATH



ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.13 PATIENT DECONTAMINATION GUIDELINES

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.13.1- Purpose	Revised: 2002

To provide personnel with general guidelines in the handling of patients involved in a HAZMAT incident. These guidelines are not intended to limit or restrict initiative, judgement, or independent action required to provide appropriate operations.

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.13.2- Scope	Revised: 2002

We will assume that any accident involving hazardous material, or chem-bio agent would carry a potential exposure risk and must be treated as such. Because of this, appropriate protective gear and monitoring equipment will be used and all patients will be considered contaminated. Decontamination of eyes, ears, nose, or mouth shall not be performed in the field without direct physician contact. Ambulatory patients without complaints shall be fully decontaminated and non-ambulatory injured patients will be decontaminated by removal of clothing. (Their skin should be deconned in an appropriate manner according to the chemical and body part involved.) Many factors such as weather, patient condition and response time to the medical facility will influence your decision. In addition the medical facility should be notified as soon as possible

S.F.F.D.-Standard Operating Procedures	Article 6
Division 6.13.3- Procedures	Revised: 2002

A. Use appropriate protective equipment.

B. During assessment remove the patients clothing and place it into a disposal bag. This should be accomplished with as little contact as possible with clothing. Doing so will contain up to seventy percent of contaminates. Always work from hot to cold to limit contamination.

C. Quickly stabilize and package the patient as necessary. Rapidly move the patient from the hazard zone to the perimeter of the hot zone to be decontaminated in the designated decon setup.

D. Hand off the patient to the personnel in the cold zone. The personnel will begin patient assessment and emergency care. If dealing with a single patient the first in team can handle patient care.

E. Once the assessment is complete and the patient is stabilized wrap them in a disposable blanket or coveralls.

F. Hand the patient off to the transport crew in the cold zone.

G. If rotation of crews is necessary, the teams will rotate from cold, to warm, to hot, then to the decon station. All crews will receive appropriate decon at the termination of the incident or as they are relieved from the hot zone.

ARTICLE 6 HAZARDOUS MATERIALS
DIVISION 6.14 REFERENCE MATERIAL

S.F.F.D.-Standard Operating Procedures	**Article 6**
Division 6.14.1 Glossary	Revised: 2002

ABSOLUTE PRESSURE	Gage pressure plus atmospheric pressure.
ABSORPTION	The taking in of toxic materials by contact with the skin.
AIR INVERSION	A meteorological condition in the earth's atmosphere in which the temperature of the air some distance above the earth's surface is higher than the air temperature of the surface. Normally, air temperatures decrease progressively as altitude increases. Such a condition traps air and released gasses and vapors near the earth's surface, thus impeding their dispersion.
AIR-REACTIVE MATERIAL	Substances that will ignite at normal temperature when exposed to air.
ASPHYXIATING MATERIALS	Substances that can cause death through displacing the oxygen in the air.
BLEVE	(Boiling Liquid Expanding Vapor Explosion) A major container failure, into two or more pieces, at a moment in time when the contained liquid is at a temperature well above its boiling point at normal atmospheric pressure.

BOILING POINT	The temperature at which the vapor pressure of a liquid equals the atmospheric pressure. The boiling point is an important indicator of the vapor pressure of a substance. A liquid with a low boiling point (less than 100°F 37.7°C) has a high vapor pressure. This will, in turn, indicate a tendency to BLEVE.
BULK CONTAINER	A cargo container, such as that attached to a tank truck or a tank car, used for transporting materials in bulk quantities.
BUNG	A cap or screw used to cover the small opening in the top of a metal drum or barrel.
CARGO MANIFEST	A shipping paper that contains all of the contents being carried by the transporting vehicle or vessel.
CHEMICAL PROPERTIES	Properties of a material that relate to toxicity, flammability, or chemical reactivity.
CHEMTREC	The Chemical Transportation Emergency Center, a telephone hotline for emergencies (Phone: 800-424-9300).
CLASS A EXPLOSIVE	A material or device that presents a maximum hazard usually through detonation.
CLASS B EXPLOSIVE	A material or device that presents a flammable hazard and functions by deflagration.
CLASS C EXPLOSIVE	A material or device that contains restricted quantities of either Class A or Class B explosives or both, but presents a minimum hazard.
CLASS A POISON	A poisonous gas or liquid of such nature that a very small amount of the gas, or vapor of the liquid, is dangerous to life.
CLASS B POISON	A substance that is known to be so toxic to human life that it affords a severe health hazard during transportation.
CODE OF FEDERAL REGULATIONS	(abbreviated CFR) The formal name given to those books or documents that contain the specific regulations provided for by federal law.
COMBUSTION EXPLOSION	Sudden fracture of a container or structure accompanied by a shock wave (sound) due to overpressure created by the attempt of a gas (often mainly air) within the container or structure to expand because of absorption of heat produced by combustion of a flammable mixture within the structure.

COMBUSTIBLE LIQUID	Any liquid that has a flash point at or above 100°F (37.7°C) and below 200°F (93.3°C).
COMPRESSED GAS	Any material or mixture having in the container absolute pressure exceeding 40 psi at 70°F (21°C), or having an absolute pressure exceeding 104 psi at 130°F (54°C).
COMPRESSED GAS IN SOLUTION	A non-liquefied gas that is dissolved in a solvent, but at high pressure.
CONSIGNEE	The person who is to receive a shipment.
CONSIST	A rail shipping paper similar to a cargo manifest. It may contain a list of the cars in the train in order or a list of those cars carrying hazardous materials and their location on the train.
CONTAINER SPECIFICATION NUMBER	A number found on a shipping container preceded by the initials DOT, which indicate that the container has been built according to federal specifications.
CONTROL AGENTS	Any material that is used to contain or extinguish a hazardous material or its vapors.
CORRECTIVE ACTIONS	Actions taken by the incident commander to correct the problem at hand in a hazardous materials emergency.
CORROSIVE MATERIAL	Any liquid or solid that can destroy human skin tissue, or a liquid that has severe corrosion rate on steel.
CRYOGENS	Gases that must be cooled to a very low temperature in order to bring about a change from a gas to a liquid.
DANGEROUS CARGO MANIFEST	A cargo manifest used on ships that contains a list of all the hazardous materials on board, including their location.
DOME	The circular fixture on the top of a tank car that contains valves and relief devices.
DETONATION	A wave that passes along the body of an explosive, instantaneously converting the explosive into a gas. This extremely rapid decomposition is a characteristic of high explosives, e.g. dynamite.
DEFLAGRATION	The intense burning rate of some explosives, slower than detonation and characteristics of low explosives, e.g. black powder.

EMERGENCY SHUT-OFF LEVERS	A means of operating a valve that stops the flow of a liquid.
ENDANGERED PERSONS	Those persons who are in the exposure area created by a hazardous materials incident.
EXCESS FLOW VALVE	A safety valve designed to shut off the flow of a liquid when the flow rate exceeds a set rate.
ETIOLOGIC AGENT	A living micro organism that may cause human disease, e.g., germs.
EXPLOSIVE	A material capable of burning or bursting suddenly and violently.
EXPOSURES	People, property or the environment that are or that may be exposed to the harmful effects of a hazardous materials emergency.
FLAME IMPINGEMENT	The points where flames contact the surface of a container.
FLAMMABLE MATERIAL	A substance that is capable of being easily ignited and of burning rapidly.
FLAMMABLE GAS	Any gas that will burn.
FLAMMABLE LIQUID	Any liquid that has a flash point below 100°F (37.7°C).
FLAMMABLE SOLID	Any material, other than an explosive, that is liable to cause fire through friction, retained heat from manufacturing or processing, or that can be ignited readily and when ignite burns so vigorously and persistently as to create a serious hazard.
FLASH POINT	The minimum temperature at which a liquid gives off enough vapors to form an ignitable mixture with the air near the surface of the liquid.
FULL PROTECTIVE CLOTHING	Clothing that will prevent gases, vapors, liquids and solids from coming in contact with the skin.
FUSIBLE PLUGS	A safety relief device in the form of a plug of low melting metal. The plugs close the safety relief device channel under normal conditions and are intended to yield or melt at a set temperature to permit the escape of gas.
HAZARD CLASS	A group of materials, as designated by the Department of Transportation, that share a common major hazardous property, i.e., radioactivity, flammability.

HAZARDOUS MATERIAL	A substance or material in a quantity or form that may pose an unreasonable risk to health and safety, or property, when (transported in commerce) (DOT).
IGNITION TEMPERATURE	That temperature at which a fuel or substance ignites and the flame is self-propagating.
INCIDENT COMMANDER	The person who has the responsibility for total operations at a hazardous materials emergency.
INCIPIENT FIRES	Fires that are in the beginning stages.
INDIVIDUAL CONTAINER	A cargo container, such as a box or drum, used to transport materials in small quantities.
INGESTION	The taking in of toxic materials through the mouth.
INHALATION	The taking in of toxic materials by breathing through the nose or mouth.
IRRITATING MATERIALS	Liquids or solid substances which, upon contact with fire or when exposed to air, give off dangerous or intensely irritating fumes.
LABELS	Four-inch square diamond markers required on individual shipping containers
LIQUEFIED GAS	A gas that is partially liquid at a temperature of 70°F (21°C).
NONFLAMMABLE GAS	A compressed gas not classified as flammable.
NONLIQUEFIED GAS	A gas that is entirely gaseous at a temperature of 70°F (21°C).
N.O.S.	Not otherwise specified.
OBJECTIVE	A main purpose to be achieved by tactical units at a hazardous materials emergency.
ORGANIC PEROXIDE	An organic derivative of the inorganic compound hydrogen peroxide.
ORMS	(Other Regulated Materials) Materials that do not meet the definitions of hazardous materials, but possess enough hazard characteristics that they require some regulation. This relates to ORM-A, ORM-B and ORM-C. ORM-D materials are hazardous materials transported in small quantities.
OXIDIZERS	A substance that yields oxygen readily to stimulate the combustion of organic matter and inorganic matter.
OXIDIZING ABILITY	The ability to yield oxygen readily to stimulate combustion.

PACKAGE MARKINGS	The descriptive name, instructions, cautions, weight or specification marks required to be placed upon outside containers of hazardous materials.
PACKAGING	A broad term used by the Department of Transportation to describe shipping containers and any markings, labels or placards affixed to them.
PHYSICAL PROPERTIES	Properties of a material that relate to the physical states common to all substances, i.e., a solid, a liquid or a gas.
PLACARDS	10 3/4" (273.0 mm) square diamond markers required on the transporting vehicle such as a truck or tank car, or a freight container 630 cu ft ($18.1m^3$) or larger.
PREVENTIVE ACTIONS	Actions taken by the incident commander at any emergency to prevent the problem from increasing, thereby keeping losses to a minimum.
PYROPHORIC LIQUID	Any liquid that ignites spontaneously in dry or moist air at or below 130°F (54°C).
RADIOACTIVE MATERIAL(RAM)	Any material that spontaneously emits ionizing radiation.
REACTIVE MATERIALS	Substances capable of or tending to react chemically with other substances, or which in themselves are readily capable of detonation at normal temperatures and pressures.
RESOURCES	All of the immediate or supportive assistance available to help control an incident; including personnel, equipment, control agents, agencies and printed emergency guides.
RUPTURE DISC	A safety relief device in the form of a metal disc that closes the relief channel under normal conditions. The disc bursts at a set pressure to permit the escape of gas.
SAFETY RELIEF VALVE	A device found on pressure cargo tanks containing an operating part that is held in place by spring force. Valve opens at set pressures.
SHEAR SECTION	A safety feature, incorporated in cargo tank piping and fittings, designed to fail or break completely to prevent damage to shutoff valves or the tank itself.
SPECIFIC GRAVITY	The weight of a substance as compared to the weight of an equal volume of water.

SPONTANEOUSLY COMBUSTIBLE	The process of increase in temperature of a material to a point of ignition, without drawing heat from its surroundings.
SHIPPING PAPERS	A shipping order, bill of lading, manifest or other shipping document issued by the carrier.
STABILIZATION	The stage of an incident when the immediate problem or emergency has been controlled, contained or extinguished.
STRESS	A state of tension put on or in a shipping container by internal chemical action, external mechanical damage or external flames or heat.
TACTICS	Successful methods or procedures used to deploy various tactical units (resources) to achieve objectives.
TECHNICAL ASSISTANCE	Personnel, agencies or printed materials that provide technical information on the handling of hazardous materials.
TOTALLY ENCAPSULATED SUITS	Special protective clothing that prevents toxic or corrosive substances or vapors from coming in contact with the body.
TOXIC MATERIALS	Substances that can be poisonous if inhaled, swallowed or absorbed into the body through cuts or breaks in the skin.
UNSTABLE MATERIALS	Substances capable of rapidly undergoing chemical changes or decomposition.
VAPOR DENSITY	The weight of a given volume of pure vapor or gas compared to the weight of an equal volume of dry air at the same temperature and pressure. A figure less than one indicates a vapor lighter than air; a figure greater than one indicates a vapor heavier than air.
WATER-REACTIVE MATERIALS	Substances, generally flammable solids, that will react in varying degrees when mixed with water or when they come in contact with humid air.
WATER SOLUBILITY	The ability of a liquid or solid to mix with or dissolve in water.
WAYBILL	The shipping paper prepared by the railroad from a bill of lading. Waybills generally accompany a shipment and are carried by the conductor in the caboose of the train.

A. Incident Objective Worksheet

B. Organization Assignment List.

C. Unit Log.

D. Sample Sit Safety Plan.

E. Hazardous Materials Data Sheet.

F. Hazardous Materials Data Worksheet.

G. Protective Actions Worksheet.

H. Field Identification Analysis Form.

I. Work Mission Duration.

J. Medical Monitoring Worksheet.

K. Hazardous Incident Response Level”A” Protective Clothing Checklist.

L. Chemical Protective Clothing Layout.

M. Site Access Control Log.

N. Hand Signals